Aaron Broukhim

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# Education

## Jun 2027 PhD in COMPUTER SCIENCE & ENGINEERING

University of California San Diego, CA, USA

* Grad-level coursework: Deep Learning, Unsupervised Learning, Deep Generative Models, Recommender Systems, ML: Learning Algorithms, Probabilistic Reasoning and Learning, Neural Networks for Pattern recognition, AI Agents
* Research Interests: Preference Learning, Conversational Audio Models, Reinforcement Learning, & Social Signal Processing.
* Advisor: [Nadir Weibel](https://hxi.ucsd.edu/author/nadir-weibel/)

# Research Experience

## July 2021 University of California San Diego, USA

to Aug 2022 *Undergraduate Researcher*

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| Sep 2018 to June 2024  Jun 2023 to Sep 2023  Jun 2022 to Sep 2022 |

## DARTMOUTH COLLEGE, USA

*Graduate Research Assistant*

* Developed mobile and wearable apps for mental health and wellbeing studies, enabling cross-device communication and real-world participant tracking across clinical, student, and workplace populations.
* Analyzed extensive longitudinal data with advanced machine learning and deep learning techniques to assess and predict human behavior, specifically focusing on mental health and wellbeing.
* Participated in multidisciplinary, multi-university collaborative research, particularly with psychologists, psychiatrists, and brain scientists, to identify research challenges and provide technical solutions.
* Led the design, data collection, cleaning, feature engineering, and machine learning modeling for various NSF/NIH mobile sensing projects at Dartmouth College.
* Published innovative research in top-ranked journals and conferences in Computer Science, including ACM IMWUT and CHI, contributing to the fields of mobile sensing, machine learning, and human behavioral modeling.

**Core competencies:** Application Development, Human-Centered Study Design, Longitudinal Data Analysis, Machine Learning, Deep Learning, Digital Phenotyping, Mental Health, Digital Health, HCI, IRB, Data Visualization, Quantitative and Qualitative Research Methods

## MICROSOFT RESEARCH, CAMBRIDGE, MA, USA

*Research Intern, Human Understanding and Empathy group*

* Conducted research on the efficacy of Large Language Models (LLMs) in enhancing productivity and well-being among information workers.
* Executed two studies: an initial user study followed by a subsequent study involving participant interaction with chat agents.
* Investigated prompt engineering techniques and developed prototypes comparing a chat agent with a generic dashboard to aid information workers in better understanding their workplace behaviors.
* Engaged in an iterative design process for refining hypotheses and research objectives.
* Collaborated effectively with team members and interns, actively involving additional stakeholders in the research process.
* Presented research findings to key stakeholders and led the preparation of the manuscript.

**Mentors:** Drs. [Javier Hernandez](https://www.microsoft.com/en-us/research/people/javierh/), [Mary Czerwinski](https://www.microsoft.com/en-us/research/people/marycz/)

**Core competencies:** LLMs, User Studies, ChatGPT, Prompt Engineering, Chat Agents, Prototyping, User Experience (UX)

## MICROSOFT RESEARCH, REDMOND, WA, USA

*Research Intern (Remote), Human Understanding and Empathy group*

* Lead two key projects aimed at investigating well-being in the workplace.
* Project 1: Understanding the dynamics between workplace rhythms and employee well-being.
* Project 2: Fundamental research on burnout among cybersecurity workers.
* Managed the entire research pipeline, encompassing study design, ethics review, data collection, analysis, and presentation of results.
* Facilitated cross-team collaboration and maintained effective communication with a diverse range of stakeholders.
* Authored two primary manuscripts; one was published at CHI 2023, and the other at CSCW 2024.

**Mentors:** Drs. [Javier Hernandez](https://www.microsoft.com/en-us/research/people/javierh/), [Mary Czerwinski](https://www.microsoft.com/en-us/research/people/marycz/)

**Core competencies:** Project Leadership and Management, Workplace Behaviors, Employee Wellbeing Research, Burnout Analysis, Study

Design and Execution, Ethics Review and Compliance, Cross-teams collaboration and Communication

# Other Professional Experience

Aug 2015 **TECHLEKH SERVICES PVT. LTD., NEPAL** to Aug 2018 *Co-Founder & CTO*

* Co-founded TechLekh, a rapidly growing technology media startup in Nepal, during undergraduate studies
* Activities include tech media as well as software development services through a sister offshoot
* Oversaw delivery of large-scale projects including edtech platforms, machine learning products, and web applications
* Currently one of Nepal’s leading tech media properties with a significant following
* Managed diverse responsibilities such as: setting organizational goals, overseeing managerial tasks, leading product development for sister organization

**Core competencies:** Entrepreneurship and Startup Management, Strategic Planning and Goal Setting, Software Development & Engineering, Team Management and Collaboration, Project Leadership and Execution

Selected Publications (Full list: Google Schola[r](https://scholar.google.com/citations?hl=en&user=7OC4jEUAAAAJ&view_op=list_works&sortby=pubdate) | [DBLP](https://dblp.org/pid/243/6457.html) | ACM D[L)](https://dl.acm.org/profile/99659442366)

Accepted or 12. S Nepal et al., [*MindScape Study: Integrating LLM and Behavioral Sensing for Personalized AI-Driven Journaling Experiences*](https://arxiv.org/abs/2409.09570), **Ubicomp 2025**.

Published 11. S Nepal et al., [*Contextual AI Journaling: Integrating LLM and Time Series Behavioral Sensing Technology to Promote Self-Reflection and*](https://arxiv.org/abs/2404.00487)

[*Well-being using the MindScape App*](https://arxiv.org/abs/2404.00487), **ACM CHI EA 2024**. Acceptance rate: 34%.

10. S Nepal et al., [*Social Isolation and Serious Mental Illness: The Role of Context-Aware Mobile Interventions*](https://arxiv.org/abs/2311.10302)*,* **IEEE PerCom Magazine 2024**.

9. S Nepal, A Pillai et al., [*MoodCapture: Depression Detection using In-the-Wild Smartphone Images*](https://arxiv.org/abs/2402.16182)**ACM CHI 2024**. Acceptance rate: 26%.

8. S Nepal et al., [*Capturing the College Experience: A Four-Year Mobile Sensing Study of Mental Health, Resilience and Behavior of College Students during the Pandemic*](https://dl.acm.org/doi/10.1145/3643501), **ACM UbiComp 2024**. Acceptance rate: 23%. [Released the dataset publicly on [Kaggle](https://www.kaggle.com/datasets/subigyanepal/college-experience-dataset)]

7. S Nepal et al., [*Burnout in Cybersecurity Incident Responders: Exploring the Factors that Light the Fire*](https://dl.acm.org/doi/10.1145/3637304), **CSCW 2024**. Acceptance rate: 36%.

6. S Nepal et al., [*Workplace Rhythm Variability and Emotional Distress in Information Workers*](https://dl.acm.org/doi/10.1145/3544549.3585626), **ACM CHI EA 2023**. Acceptance rate: 34%.

5. S Nepal et al., [*COVID Student Study: A Year in the Life of College Students during the COVID-19 Pandemic Through the Lens of Mobile Phone Sensing*](https://dl.acm.org/doi/10.1145/3491102.3502043), **ACM CHI 2022**. Acceptance rate: 12.5%.

4. S Nepal et al., [*Assessing the Impact of Commuting on Workplace Performance Using Mobile Sensing*](https://ieeexplore.ieee.org/abstract/document/9566617), **IEEE PerCom Magazine 2021**. IF: 3.175.

3. S Nepal et al., [*Current practices in mental health sensing*](https://dl.acm.org/doi/abs/10.1145/3481829), **ACM XRDS Magazine 2021**.

2. S Nepal et al., [*Detecting Job Promotion in Information Workers Using Mobile Sensing*](https://dl.acm.org/doi/10.1145/3414118), **ACM UbiComp 2020**. Acceptance rate: 24%.

1. S Mirjafari et al., [*Differentiating higher and lower job performers in the workplace using mobile sensing*](https://dl.acm.org/doi/abs/10.1145/3328908), **UbiComp 2019**. Acceptance rate: 20%.

In-prep or 2. S Nepal et al., [*From User Surveys to Telemetry-Driven AI Agents: Exploring the Potential of Personalized Productivity Solutions*](https://arxiv.org/abs/2401.08960), Under major revision at **ACM CSCW 2025**.

review 1. S Nepal et al., [*A Survey of Passive Sensing in the Workplace*](https://arxiv.org/abs/2201.03074)*,* **arXiv 2024**.

# Volunteering & Awards

Volunteer • Founding Board Member, Better Life Social Organization USA

—> A 501(c)(3) non-profit organization working for disadvantaged children mainly in Nepal

* Founding Member, Dartmouth Nepali Students Association

—> Dartmouth student club for students of Nepali origin

Reviewer • ACM UbiComp ‘19-24 • ACM CHI ‘21, ‘24, ‘25 • ACM CSCW ‘21, ‘22 • Scientific Reports ‘21 • Grant Reviewer, Stanford HAI ‘24

Awards • Special Recognition for Outstanding Review at CSCW 2023 and CHI 2024 (2x)

* Best Poster Award at Dartmouth Digital Health Summit (2023), Dartmouth College, USA
* Distinguished Paper Award (2023), ACM UbiComp, Cancún, Mexico
* Neukom Outstanding Graduate Research Award (2023), Dartmouth College, USA
* Guarini Travel Award (2023), Guarini School of Graduate and Advanced Studies, Dartmouth College, USA
* Neukom Travel Grant (2023), Neukom Institute for Computational Science, Dartmouth College, USA
* Best Paper Honorable Mention (2020), IEEE Pervasive Computing Workshop

# Miscellaneous

Tech Skills • Python • LLM • Java • JavaScript • Bash Script • Android • Git • Nginx • SQL • MongoDB • PyTorch • R • PHP

* Flask • Laravel • Docker • HuggingFace • FastAI • Scikit-learn • AWS • Azure Cloud Storage • REST • Mlxtend

Media • [*Study Tracks Shifts in Student Mental Health During College.*](https://home.dartmouth.edu/news/2024/03/study-tracks-shifts-student-mental-health-during-college)Dartmouth News, March 2024.

* [*AI App That Can Use Facial Cues to Detect Depressions.*](https://www.iheart.com/content/2024-03-04-subigya-nepal-on-ai-app-that-can-use-facial-cues-to-detect-depressions/)The Ross Kaminsky Show (iHeartRadio), March 2024.
* [*Pandemic exposed mental health divide among college students, study says.*](https://archive.ph/12Ph5)Washington Post, May 2022.
* [*Smartphone intervention feasible for Severe Mental Illness.*](https://archive.ph/P4UfN)HealthDay, Nov 2021.
* [*Wearable tech confirms wear-and-tear of work commute.*](https://archive.ph/X7tgZ)Dartmouth News, Nov 2021.
* [*Rates of anxiety and depression among college students continue to soar, researchers say.*](https://archive.ph/ziKNx)Washington Post, June 2021.
* [*Coronavirus has made already-stressed college students even more anxious & depressed.*](https://archive.ph/7462Q)Washington Post, July 2020.
* [*Researchers developed a sensing system to constantly track the performance of workers.*](https://archive.ph/EX72e)TechCrunch, June 2019. Languages • English (fluent) • Hindi (fluent) • Nepali (native)

References • Available upon request.